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ABSTRACT

The New England Educational Assessment Project was designed to conduct assessments of activities which provide resources for decision-making focused upon current state and regional problems in education. Nine innovative practices that may indicate the nature of educational change in the 1970's were selected from the many excellent projects in New England. Each State Department of Education was requested to submit projects for consideration. The criteria for selection by the assessment committees included: evidence of deliberate planning, an awareness of existing programs, utilization of resource people, efficiency, nature of the change, potential impact of the strategies on the recipients, and the probability of adoption. These have been carefully examined by qualified teams. On-site project visitation and intensive group and individual interviews were used to gather data on each project from project directors, administrators, teachers, and pupils in each school visited. Studies by Richard Carlson and Owen Kieman, and Henry Brickell on educational change processes were used as guides. The projects are described and evaluated in this report as a resource for those concerned with innovations in school administration and organization, curriculum, and the use of technology in the classrocm. (SBE)

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INNOVATIVE PRACTICES IN NEW ENGLAND SCHOOLS

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INNOVATIVE PRACTICES IN NEW ENGLAND SCHOOLS

THE NEW ENGLAND EDUCATIONAL ASSESSMENT PROJECT
Section 505, Title V, Elementary and
Secondary Education Act of 1965

AUGUST 1969

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PREFACE

Innovations in education originate in the mind of an individual and become operative through the cooperation of many, usually involving administrators, teachers, and students. Discovery of new knowledge, especially in the sciences, the development of new equipment and materials, the construction of new and extensive facilities and the availability of federal funds have in recent years stimulated innovation. The New England Educational Assessment Project was designed to conduct assessments of activities which provide resources for decision-making focused upon current state and regional problems in education.

The State Directors of NEEAP have selected from the many excellent projects in New England nine innovative practices that may indicate the nature of educational change in the 1970's. These have been carefully examined by qualified teams. These projects are described and evaluated in this Report as a resource for those concerned with innovations in school administration and organization, curriculum, and the use of technology in the classroom.

Providence, Rhode Island
June, 1969

Philip A. Annas
Project Director

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CHAPTER I

Introduction

Education is in a period of reexamination and change as a consequence of unprecedented innovative activity. Large scale refinement and redefinition of educational goals can have a significant impact on the learning of children. An understanding of the antecedent conditions and processes that characterize successful innovations is essential to promote the development of programs that are truly responsive to the needs of the school.

The New England Educational Assessment Project undertook a study to identify components of the process of innovation. A purpose of the investigation was to identify and describe several selected innovations that exemplified change and to report these findings to educational leaders. The intent from the beginning was to create a greater awareness of conditions in local school districts which were successful in modifying the attitudes and behaviors of people and report these commonalities as a basis for stimulating educational change.

The literature suggests many uses for the term "innovation" in educational practice. From the beginning, new programs were accepted by the Assessment Project as meaning not "first-time ever" nor the invention and adoption of new approaches. Innovations were defined as novel practices that would improve the quality of educational opportunities by meeting the particular needs of the population served.

The first problem in launching the study was to select the schools for visitation. They were to be visited to discover the factors that contributed to the achievement of their goals.

Each of the New England State Departments of Education was requested to submit for consideration innovative projects in three areas - curriculum, technology, and administration - which would merit site visitation. The final selection of the projects was made by the Board of State Directors of the New England Educational Assessment Project. The criteria for selecting innovative projects included evidence of deliberate planning, an awareness of existing programs, utilization of resource people, efficiency, nature of the change, potential impact of the strategies on the recipients, and the probability of adoption.

The innovative practices were used as a basis for scrutinizing school environments in which educational change had emerged. The programs were successful in achieving stated aims, considering the context, special circumstances, and needs of the area served. The innovative projects reported in Chapter II can provide a point of departure for school districts searching to resolve similar problems. It is assumed that replication of any of the projects would be highly selective, and would be done with cognizance of local conditions.

The Innovation Practices Committees developed instruments for gathering data from project directors, administrators, teachers, and pupils in each of the schools visited. Several visitations were made to each site to obtain information relating to various stages of innovation such as awareness of the problem, data acquisition, selection and involvement of staff, sources of resistance, evaluation, and trial. The Committees conducted intensive group and individual interviews as the principal means of obtaining data relating to each project.

The committee was guided by several studies of the change process. The stages of innovation developed by Carlson and Kiernan were used in developing questions relevant to the sequence of change.[1] The findings of Brickell in his study of innovation in New York State were helpful in comparing and synthesizing the data from the project.[2]

Limitations

A major limitation of the study involved the selection of schools for inclusion in the project. Only those schools whose innovative programs were known to the state departments of education at the time of the study were considered as possible visitation sites. Most of the projects were in the initial stages of development, and the use of rigorous assessment procedures would have been inappropriate and impractical.

Organization of the Report

Chapter I presents a discussion of the rationale for the Innovative Practices Study. Chapter II contains detailed descriptions of each of the projects visited by the New England Educational Assessment Project Committees. Chapter III includes a discussion of common elements observed by the committees along with implications for schools and state departments of education.

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[1] Carlson, Richard O. and Owen B. Kiernan. A Plan for Curriculum Innovation in Massachusetts. Boston, Massachusetts. Massachusetts State Department of Education. September, 1966.

[2] Brickell, Henry M. Organizing New York State for Educational Change. A Report for the Ford Foundation, Albany, New York State Education Department. December, 1961.

CHAPTER II

SECTION A. INNOVATIVE PRACTICES IN SCHOOL ADMINISTRATION AND ORGANIZATION.

When School Districts Work Together.	Project METRO Hartford County, Connecticut
Effective Use of Restricted School Facilities.	Extended School Day Falmouth High School Falmouth, Massachusetts
Unconfined Minds in an Unconfined Atmosphere.	Paul A. Smith Elementary School Franklin, New Hampshire

SECTION B. INNOVATIVE PRACTICES IN CURRICULUM.

School for Parents and Children.	Brunswick, Maine
Closing the Generation Gap.	Project EPIC Cranston Public Schools Cranston, Rhode Island
Freedom to Speak.	Project FABRIC School Administrative District No. 33 Saint Agatha, Maine.

SECTION C. INNOVATIVE PRACTICES IN THE USE OF TECHNOLOGY IN THE CLASSROOM.

Learning Laboratory for Curriculum Innovation.	Bowman Elementary School Lexington Public Schools Lexington, Massachusetts
Space Science Education Center.	Middletown Public Schools Middletown, Rhode Island
A Regional Science Center for Student Involvement.	Talcott Mountain Science Center Avon, Connecticut.

SECTION A.

INNOVATIVE PRACTICES IN SCHOOL ADMINISTRATION AND ORGANIZATION

When School Districts Work Together.

Project METRO
Hartford County, Connecticut.

Effective Use of Restricted School Facilities.

Extended School Day
Falmouth High School
Falmouth, Massachusetts.

Unconfined Minds in an Unconfined Atmosphere.

Paul A. Smith Elementary School
Franklin Public Schools
Franklin, New Hampshire.

When School Districts Work Together

Project METRO

(Metropolitan Effort Toward Regional Opportunity)

Location - Greater Hartford and Central Connecticut Area

Address - 200 Bloomfield Avenue, West Hartford, Connecticut 06117

Director - John J. Allison, Jr.

Project METRO is an agency of the school districts in the Greater Hartford area serving a variety of educational needs through cooperative action.

I. Description of Project METRO

Purpose and Objectives

Project METRO was established as a cooperative effort of school districts in the Greater Hartford area to serve as an agent of change in promoting educational progress through cooperative endeavors. Its basic concept is that of an agency which is flexible in design, giving emphasis to programs having an impact on the classroom teacher and the curriculum, and providing exemplary educational activities for youth.

More specifically, METRO's program encompasses three major types of services: (1) program planning or curriculum development, (2) in-service education, and (3) an area resource center. An effort is made to keep these services flexible and responsive to changing needs.

METRO services are those which individual school districts find it difficult or impossible to provide alone.

METRO aids school districts to examine education, appraise needs, and select activities and practices designed to meet those needs. It then promotes, facilitates, and assists in carrying them out.

Initiation and Organization

All projects in Connecticut under Title III, ESEA, are required by State regulation to be of a cooperative nature. Accordingly, the school superintendents and boards of education in the Greater Hartford area sought and received in 1966 a planning grant to prepare a plan for an area project. A survey of the area was made to evaluate the existing educational services and the more important needs. The planning grant was followed by an application for an operational grant under Title III, PL 89-10, January 13, 1967.

METRO presently serves thirty-four Greater Hartford and Central Connecticut communities with approximately 400 public, private, and parochial schools, 11,000 teachers and administrators, and 200,000 pupils. There is a Professional Advisory Board composed of the superintendents and assistant superintendents of the participating school districts. There is also a lay advisory board which has representation from the 34 area school boards. This lay board is known as the Capitol Region Educational Council (CREC). The basic purpose of CREC is to improve education in the Capitol Region and to promote cooperative endeavors. CREC is governed by a nine-member board of directors who make recommendations to the Council. The Council, as a whole, sets policies.

Plans are under way to make CREC the actual governing agency for METRO, subject to legislative action which would authorize such an agency to receive state funds, which it cannot do under existing law. Presently, METRO funds are channeled through the Wethersfield School Department.

Space for administrative offices and the Resource Center is rented from the University of Hartford in University Hall, West Hartford.

The present staff consists of the following:

Director
Assistant Director
Administrative Assistant
Information Specialist
In-Service Education Specialist
Negro History Specialist
Graphic Artist
Television Specialist
Librarian.

In addition, there is a secretarial pool of three, and part-time help during evening hours consisting of students from the University of Hartford and Hartford Theological Seminary.

The METRO budget for 1968-69 was composed of non-Federal funds (including in-kind) of $545,650 Title III funds, $163,107 and other Federal funds of $1,350 for a total of $710,107. The request for 1969-70 is for $415,000 including $200,000 of Title III funds and $130,000 from local schools. Of the increase in requested funds, $50,000 is for materials for the Center plus provision for staff salary increases.

CREC itself presently has an administrative budget of 10 cents per pupil. It has now been raised to 20 cents per pupil, and next year will go to approximately 30 cents per pupil.

Should Title III funds be discontinued, either services would have to be curtailed, or more funds would have to come from the participating school districts. A greater per pupil assessment could be made. With nominal charges, many of the present services of METRO could be self-supporting.

METRO Services in Action

One of the key types of services provided is the METRO Area Resources Center located at 200 Bloomfield Avenue, West Hartford, Connecticut. The primary objectives of the Center are (1) to provide teachers an opportunity to find, preview, and evaluate available audio-visual materials for classroom use, (2) to obtain evaluations of films used by teachers for purposes of classification and (3) to compile information about media for the benefit of school systems and media producers.

The following materials have been obtained and catalogued: Over 3,000 16mm. films, 750 slides, 5,000 transparencies, 2,000 posters, 150 video tapes, 200 8mm. loops, 1,000 film strips, and 1,500 texts.

METRO does not propose to provide a library service to adequately serve the Greater Hartford area, although this need is partially supplied. Its real purpose is to evaluate materials with the object of classifying them as to (a) materials which should be available in the classroom, (b) materials which should be in the library of each school, (c) materials which might more properly be available from a library in a smaller area (centerette or sub-center), and (d) materials so costly or used so infrequently that they could best be supplied by the Resource Center itself since the investment would be questionable for local or sub-center operations.

From October 1967 to October 1968, over 8,000 persons used the Resource Center materials. More than 11,000 items were borrowed. Currently, fifty to eighty persons per school day sign in, and 2,700 to 3,000 items per month are borrowed by teachers for classroom use.

If teachers are unable to find appropriate slides, slide films, and certain other visual materials to meet specific needs, the Graphic Artist will produce or prepare such materials at a nominal cost. The Television Specialist will produce audio and video tapes for cooperating agencies at no cost unless it is desired to purchase the tape which is provided at cost.

Another major type of service provided by METRO is in-service professional education. During the year ending in July 1968, approximately 75 in-service programs were offered. These consisted of conferences, work shops, seminars and courses. There are usually from one to three in-service programs in operation each week, ranging from single session programs to full credit courses.

METRO provides some college credit courses in cooperation with three area colleges. If and when these colleges approve the name of a course, the course outline, and the instructor, the course is listed in their respective catalogs. Teachers may then sign up for the course at any one of the three colleges and receive credit at that college. Teachers pay tuition to the college which, in turn, pays METRO its respective share of the cost. Courses are thus made available which a single college would not find it possible or economically feasible to offer.

During the evaluation, the team members had the opportunity of looking in on two in-service seminars in progress; one in elementary mathematics and one in sensitivity training.

METRO has established a "School Without Walls", a program involving the discovery of promising and/or successful practices or activities in the area schools and the encouraging of teachers to visit and observe one or more practices or activities. METRO will pay for a substitute to permit a teacher to make such a visit if the teacher's regular professional leave allowance is exhausted.

Still another major type of service is that of program planning or curriculum development. In this area, METRO has developed 20 workshops in Graphics, assisted in the development of a Family-Life curriculum guide, and is giving special attention to Negro history and culture by making a special lecturer available on this subject. Individuals are engaged to write curriculum materials, obtain suitable materials, provide programs, and disseminate information with the objective of having communities eventually "pick up" the programs.

The curriculum guide on "Family-Life Education" was originally conceived by faculty members in the Greater Hartford area who were aware of the need. The METRO staff became a part of this project and was responsible for preparing the curriculum guide and publishing it in its final form. It is now used in 75 percent of the METRO school systems as well as by others both within and without Connecticut.

In addition to these major types of services, METRO cooperates with and provides assistance to other agencies which may involve either curriculum development, in-service training, or both. Some of these agencies include (a) Learning Center, Farmington, Connecticut, which is concerned with the diagnosis of learning difficulties and recommendations for treatment, (b) Project Outdoors, in cooperation with the Lutz Junior Museum, Manchester, Connecticut. This agency specializes in the training of teachers to use the out-of-doors as a teaching station, (c) Project Remodel - here there is specialization in the development of materials and the preparation of staff for use of mathematics laboratories in Wethersfield, West Hartford, and Manchester, (d) Centerette - this is concerned with the development of a sub-center in one section of the METRO region which may be a pattern for the establishment of other sub-centers, (e) Operation Software - this is concerned with the development of programs for the Childrens' Museum Planetarium, West Hartford, to supplement the curricular offerings of the local school systems.

METRO also services other Title III groups in the State of Connecticut as well as providing facilities and services to the Connecticut State Department of Education.

Communication is a continuing problem. For an agency such as METRO to be of the greatest possible service, it is essential that those it serves be fully informed as to services available. The Center, with a mailing list of eleven hundred, publishes weekly and monthly newsletters which go to every school and every board member. Each teacher receives two newsletters every three months, these containing digests of all other newsletters. This is in addition to the usual news media and personal contacts.

Success to Date

Information made available during the evaluation would seem to indicate that Project METRO is an imaginatively conceived, broadly based, and essentially experimental undertaking which is still in the developmental stage. Staffed by an enthusiastic, skilled, and loyal group of administrators and specialists, METRO comes into focus as an educational project which is anxious to fulfill its objectives and to make its influence dramatically felt in the area of in-service professional improvement, and cooperative efforts in curriculum development.

It seems apparent that many constructive programs are in the process of taking place and the prognosis for future development seems quite excellent if METRO can secure uniform support and cooperation of the school administrators and boards of the participating school system together with adequate financing.

In accordance with the basic philosophy of Project METRO, efforts have been made to develop and adapt activities to those needs and opportunities which METRO is in a special position to serve. In the words of the Director, "It is possible that in the future none of the existing divisions of the METRO Educational Services Center will be in evidence. There will be entirely new and different needs realized by our constituents, and METRO/CREC will exist as an established vehicle to meet the ever changing needs."

Merits

The concept of METRO seems essentially sound. It appears that much can be achieved by the cooperative efforts of school districts which will benefit each district and what is more important, the individual pupils. There is evidence with METRO that some services can be provided more efficiently by cooperative effort and that, with priority demands for the tax dollar, other services can be provided which would not otherwise be available.

There are inherent problems involved in any attempt to obtain full cooperation and it appears that strong leadership coupled with involvement and participation by all concerned is most important to success. Project METRO, among other things, is tending to serve as a kind of model for the development of cooperative action.

Certainly there is much that is creative, innovative, and highly useful in the Project METRO range of educational services. School districts in other geographic regions will certainly profit from a careful study of this project and its development to date, especially with respect to the mutual benefits which can be realized by cooperative action.

Cost-Benefit or Cost-Effectiveness

Project METRO was initially funded largely through Title III, ESEA, with participating school districts assuming more expense as the Project has progressed. Several teachers and school administrators were interviewed by the evaluation team and it was found that their opinions were mixed. Some felt that the Project was well worth the cost while others raised some questions. However, 90 percent of the communities now in METRO will support it financially next year, which appears to be significant as one measure of its value.

Most of the benefits of METRO cannot be measured in dollars and cents. Who knows the value for 200,000 pupils of any improvements in their education resulting from the activities of Project METRO? Who can place a value on the potential benefits resulting from the development of cooperation among 34 school systems?

II. The Process of Change

Awareness

It is impossible to pinpoint in time the recognition of the educational needs which are now being served by Project METRO. Undoubtedly, school administrators and teachers had been aware of these needs, or many of them, for a considerable period of time but had not the means for adequately dealing with them. All educators, at one time or another, become aware of some changes or innovations which would improve educational practice, but without the necessary authority, or the required funds, or both, nothing is done about them.

Interest

Real interest in attempting to meet some of the existing needs was generated by the availability of Title III, ESEA, funds. The fact that these funds could be used in Connecticut only for cooperative projects led to the organization of Project METRO. Some of the administrators and board members in the Greater Hartford area saw in Title III a means of doing some things to improve education which school districts had been unable to do and which might be done effectively and efficiently through cooperative effort.

Evaluation

It is noteworthy that a Title III planning grant was first requested before any attempt was made to design the project. This made possible a systematic study and evaluation of existing educational needs which were generally common to the school districts involved, and some agreement as to those services which might well be provided cooperatively.

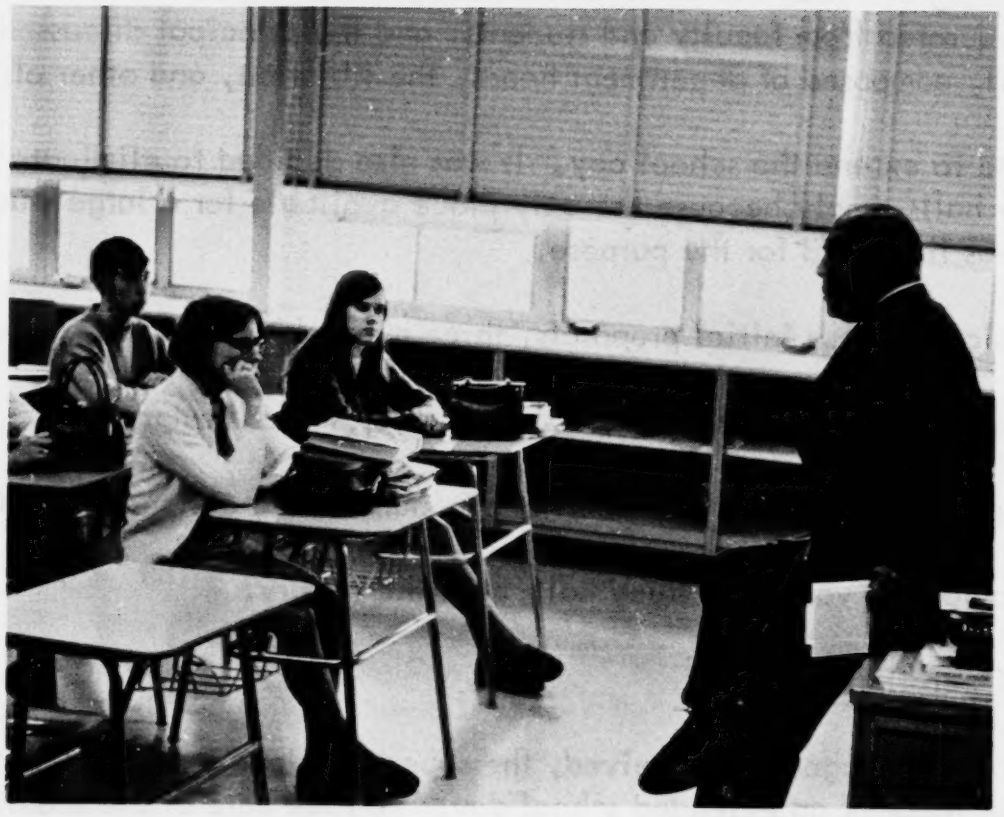
Trial

The initial funding of Project METRO under Title III, ESEA, with only modest local support provided the means of developing the proposed cooperative undertaking on a trial basis. In a very real sense, the first three years of operation constitutes a trial run and a demonstration of the merits of the METRO concept.

It seems pertinent to indicate that the successes of METRO to date are due in no small measure to the competent and dynamic leadership of Director Allison and the skillful, loyal, and dedicated members of the staff. It is probable that an undertaking of this kind could not be very successful without such talent.

Potential for Adoption

The present plans for the Capitol Region Educational Council, a permanent organization, to assume the direction of Project METRO, and the increasing level of financial support by the participating school districts serve as evidence of a recognition of the benefits now realized, or those which are possible, by such a cooperative endeavor and give promise of the continuation of METRO as an on-going organization responsive to the everchanging needs of the area.



Project METRO, Hartford County, Connecticut

Effective Use of Restricted School Facilities

Extended School Day

Location - Lawrence High School, Falmouth, Massachusetts

Address - Falmouth, Massachusetts

Superintendent - Mr. Harry S. Merson

Principal - Mr. Russell B. Marshall

The program at Lawrence High School in Falmouth, Massachusetts, designed to alleviate a serious overcrowding situation, has developed some innovative features which might serve as valuable additions to any high school program.

I. Description of the Project

Purpose and Objective

The basic purpose of the program was to solve problems resulting from an overcrowded condition.

In looking forward to the 1968-69 school year, the administration was faced with the problem of serving the needs of about 1200 students in a building designed for approximately 950. So it was that in the spring of 1968, the administration began looking for the best possible solution. Suggestions were requested from faculty and students, and the principal discussed it with the Administrative Council, composed of department heads, the librarian, and other officials.

It was decided to extend the school day. It was also decided to eliminate compulsory attendance at study halls simply because the only place available for a large study hall was the auditorium which was ill-suited for the purpose.

In the discussion of these initial proposals, three main objectives were developed:

1. Use the auditorium for the things for which it was designed.

2. Use the cafeteria as a student lounge similar to a college students' lounge.

3. Provide for voluntary study halls near the library.

Organization and Operation

In consideration of suggestions received, the superintendent and principal rejected the idea of double sessions in favor of an extended school day. To take care of the unsatisfactory study hall situation, they proposed to allow students a free choice of alternatives during their unassigned periods.

The extended school day, consisting of nine periods, provides for two overlapping shifts of students and faculty, the juniors and seniors starting at 7:45 A.M. and completing work usually by 1:54 P.M. The freshmen and sophomores report at 9:22 A.M. and leave at 3:30 P.M. To transport the two shifts, school buses make four trips daily. There are some students who for one reason or another are in school for the full nine periods.

During free periods, students may report to designated study halls if they wish to study, but they are also free to go to the cafeteria, or the auditorium, or leave the school building, at their own discretion. The only exceptions are those students whose parents have specifically requested that they not be allowed this freedom or those whose freedom is restricted for disciplinary reasons.

In the auditorium there is a, more or less, continuous program of activities designed to interest students and provide educational enrichment. Except during the lunch hours, the cafeteria serves as a student lounge where snacks may be secured and students may read, play chess or checkers, or chat with their friends. A "juke box" was recently installed in the cafeteria.

While students may leave the building and the school grounds during free periods, they are not permitted to take cars off the campus during their regular school hours.

The greatest advantage of the extended school day appears to be its flexibility which gives students opportunities to do many things which were not possible under the traditional type of program.

1. Students can take more electives if they wish, and many of them do.

2. Students can participate to a greater extent in extracurricular activities.

3. Many seniors, by having their classes during the first five periods, are through school at 12:40 and are able to take afternoon jobs.

4. The auditorium program provides many opportunities for enrichment.

5. Students have more opportunity to examine occupational materials and school catalogs in the guidance office or do research in the library.

The auditorium program and the cafeteria-lounge represent dividends over and above the original purpose of alleviating overcrowding and are features which could well be considered in other schools.

The Auditorium Program

During the 1967-68 school year, it had been necessary to assign as many as 300 to the auditorium for study during some periods and the situation was very unsatisfactory for both students and teachers. Even with the supervision of four teachers, "200 students didn't want to study and the other 100 couldn't." Lighting was not suitable for close reading. Persons wishing to write had to prop a pad on their knees. As one person described it, "study hall became less a time for preparing lessons and more of an exercise in restraint by four teachers in charge of 300 students."

By eliminating compulsory study halls, it was possible to develop a program in the auditorium which provides not only a place for students to go voluntarily during free periods, but also an excellent opportunity for broadening and enriching their education.

Mr. James T. Kalperis, a former teacher and track coach, was appointed Administrative Assistant in charge of student affairs with responsibility for the auditorium program. He was popular with the students and tended to identify in an effective and positive way with all segments of the student body. An enthusiastic individual, he is apparently learning on the job as he gives leadership to the auditorium program and related student activities. He views the present program as an experiment and the auditorium as a vehicle for the participation and involvement of students and teachers. He feels that teachers should be excited about the possibilities in the auditorium program.

To date it has been necessary to fill a considerable portion of the time with films, but it is Mr. Kalperis' aim to develop programs which will more and more involve students, teachers, and community representatives in live programs.

In general, students are free to attend auditorium programs during free periods, or not, as they see fit. Occasionally a teacher may bring an entire class for a special program having some relevance to its classroom subject area. Occasionally, too, a class may prepare and present a program. As far as possible programs are repeated once or twice to permit attendance by more students.

One day each week there are programs pertaining to the visual and performing arts provided by the school's art department under the direction of Mr. Conrad Karlson, head of the art department, who also assists Mr. Kalperis with other programs.

The greatest critics of the programs are the students. They liked programs consisting of panels, forums, and discussion groups. They also liked the programs which included folk singing but were less interested in rock and roll bands and tended to be rather critical of the film offerings.

Students seemed to agree with Mr. Kalperis that there should be more direct involvement by students in the planning of programs.

Following are some examples of programs which have been presented this year:

A series of guidance sound film strips -
- Failure, A Step Toward Growth
- Hung Up on Homework
- Choosing a College
- Someone's Cheating
- Dropout, Going Nowhere

Experimental films, presented by Mr. Karlson.

A variety of speakers, such as -
- College representatives
- Slide lectures
- Speaker on fashions, good grooming and careers for women

Talk Time, panel discussions of interesting topics with audience participation -
Political debates
Discussion of the generation gap (very popular)
Armed Services representatives (draft obligations, opportunities in the various services, etc.)

The auditorium program is scheduled and published in the local paper for the following week. The public is welcome to attend any programs of interest.

The Cafeteria-Lounge

Mr. Milton A. Carlson, a para-professional, is in charge of the cafeteria program. A person well known in the community, he is a man in his middle years who has retired from the Army where he was a non-commissioned officer. He is interested in young people and in athletics and has good rapport with students.

Breakfast is served from 7:15 to 8:00 A.M. From 8:00 to 11:00, the cafeteria serves as a snack bar and student lounge, and again after the noon lunch period.

"Our program is set up to teach students how to act in college in their free time," said Mr. Carlson. The program is designed to serve in much the same way as a college student lounge. Proceeds from the juke box is used to purchase games, such as checkers, chess, and cribbage, and to subscribe to magazines. At Christmas time, two trees and decorations were provided. Thus, these activities are self-supporting.

During the first few weeks under the new system, large numbers of students went downtown, which resulted in some criticism. But soon the novelty wore off, snacks were available in the cafeteria at the same or lower cost, and students found it more attractive to remain in school.

Reaction of Students

The evaluators asked to meet with a cross section of the student body. Fourteen representatives, boys and girls, from the freshman through the senior class came to an impromptu meeting as a result of this request.

In general, all students were enthusiastic and supporting of the "free time" concept. They feel that it is good preparation for college. They also feel that communications has drastically improved within the school and that morale has changed for the better. They feel that the new relaxed regime has reduced tension and has helped students to come to class better motivated and ready to learn.

The students expressed opinions that a school should start such a program gradually, that rules should be established and then enforced. They feel that the program promotes self-discipline and individual responsibility. Some students questioned whether students in some other schools would accept the responsibility which is necessary to make such a program successful. They feel that much of the success is due to the attitude of the administration.

Reaction of Administration and Faculty

The principal finds that student response to this program has been good. He finds that juniors and seniors are especially responsive and that the sophomores are learning to adjust. Freshmen have the greatest difficulty in learning to handle the new freedom in a mature fashion.

In general, students appear less tense and more relaxed. Teachers report that students now come to class with more incentive to learn and that they are participating more actively in classroom work and learning more. Teachers, in turn, are pleased not to have to function as "policemen" and also appreciate the fact that the students are responding in a mature and responsible way to subject matter teaching. In some ways, teachers are finding that the new responsiveness on the part of students forces teachers to be "on their toes" in a way that is different from the past. As student morale has improved, they are demanding more from their subject matter teachers.

It was reported that grades have improved. One teacher stated that those students who really want to learn are doing better, and the others are doing no worse.

Problems

Besides the minor problems incident to the orientation to a new system, there are specific problems related directly to the new organization.

1. The matter of public acceptance was a concern. There was a great deal of publicity before the program started. There was some unorganized opposition. At first, the newspaper was critical of the program, but now it supports it.

2. Since there are no homerooms, the keeping of attendance has presented a problem. It has been solved by picking up absentee slips and having them checked every period every day.

3. It has been more difficult to arrange for meetings with the entire faculty.

4. Insurance presented a problem. The School Committee has increased insurance coverage to take care of a student who is hurt either on or off the school grounds. Insurance does not cover car accidents off the campus and a student is not permitted to take a car off the campus until the end of his school day.

5. Smoking is a problem but is no worse than under the traditional program.

Cost Information

This program was established without additional cost to the community. While a person was designated to handle the auditorium program and another was employed to supervise the cafeteria-lounge, these people plus two more would have been needed to supervise study halls under the former plan of organization.

II. The Process of Change

Awareness

During the 1967-68 school year, the superintendent, principal, and faculty became painfully aware that some drastic action was necessary to deal with the serious overcrowding which was certain to become aggravated in the fall of 1968.

Interest

Interest was engendered by the real necessity for some kind of action.

Evaluation

Consideration was given to several suggestions and alternatives and the proposed program was evaluated as the most promising solution to the problem and worthy of trial.

Trial

Lawrence High School is involved in an innovative and experimental program, seeking to solve current and potential problems. In every sense, the program is on trial. The principal stated, "We have learned a lot this year and will improve the program next year."

Potential for Adoption

As indicated above, it is the intention to continue the program with such improvements as can be made, at least until a new building is available. Some of the features of the program have proved of sufficient value that they would be continued even though ample space should be provided to accommodate all students in a traditional type of organization. In fact, the principal has ideas for expanding the opportunities when enough space is available, such as laboratory space for individual work, a meeting place for student publications, and larger facilities for art.

Unconfined Minds in an Unconfined Atmosphere

The Paul A. Smith Elementary School

Location - West Franklin, in the City of Franklin, New Hampshire

Address - Lawndale Road, Franklin, New Hampshire

Superintendent - Herman N. Donegan

Principal - Robert J. Ross

The Paul A. Smith Elementary School is a new school of open design with a non-graded organization involving team teaching and individualized instruction. From the standpoint of school administration and organization, the outstanding features are the coordinated approach to curriculum development, building design, and staff training, together with the cooperative involvement of the building committee, the school board, and consultants from the State Department of Education and from Plymouth State College.

I. Description of the Project

Purpose and Objectives

The basic purpose was to establish a school wherein each pupil could experience success and progress at his own rate.

The objectives were to develop a curriculum to serve the above purpose, to design a building appropriate for the proposed curriculum, and to prepare the staff to conduct the proposed program.

Development

Franklin is a small, industrial, low income community with a population of 7000 and a school population of 1525 public and 475 parochial school children. The principal industry is the J.P. Stevens textile mill. Franklin just does not have a lot of money with which to operate. As a consequence, taxpayers will approve construction of new school facilities only when actually needed, not on the basis of projected needs.

Franklin was faced with the need for additional school space. Consideration was given to the following alternatives: (1) to add to present school buildings, (2) to build a new middle school, or (3) to build a new elementary school. The superintendent and the community favored the concept of neighborhood schools. A decision was made to design an open school to be located in what may be called a poorer section of the city where there was no school and where a number of families live in trailer parks, trailers and camps.

Dr. Paul A. Smith, chairman of the school board, was deeply interested in children, much concerned with the school dropout problem, and believed this problem should be attacked at the elementary and intermediate levels. He had studied this problem and had read widely for a considerable period of time. Dr. Smith was probably the prime mover in the development of the new school and gave the initial leadership to the enterprise.

Seeking to find answers to his questions, Dr. Smith contacted the Ford Foundation and was referred to the Educational Facilities Laboratory, New York, under the supervision of Dr. Harold Gore. As a result of this contact, Dr. Smith, Superintendent Donegan, and other interested persons made visits to a number of experimental schools including the Queens Campus School in New York; the Barrington, Illinois, Middle School; the Valley Winds School, St. Louis, Missouri; and the Stanford University Model School.

These visitations served to stimulate further enthusiasm on the part of community leaders and, as a result, architectural plans were made and eventually approved by the City Council for a school without walls which would provide for team teaching and individualized instruction.

Staff Preparation

When visiting the Valley Winds School, it was found that the school program was not working as anticipated because the staff had not been trained. Therefore, it was decided that in Franklin, the staff should be involved from the start. They sought volunteers among the teachers in the system who were interested in investigating their newer type of teaching in a new school. A core of seven teachers was obtained, teachers who knew that the project would involve extra work on their part.

The seven teachers visited Lexington, Massachusetts twice; Winchester, Massachusetts twice; Sudbury, Massachusetts; Fairhaven, Connecticut; and Amherst, Massachusetts. Substitutes were hired during these visits and Franklin underwrote the teachers' expenses. These trips engendered in the teachers the same type of enthusiasm that had been engendered in the superintendent, chairman of the school board, and the architect upon their visitations.

A grant of three thousand dollars was obtained from the Educational Facilities Laboratory for professional development. The Center for Educational Field Studies, University of New Hampshire, provided a person on the University staff as a consultant with the teacher working group.

An institute on team teaching and individualized instruction was held at Franklin under the sponsorship of Plymouth State College and directed by Mr. John Economopoulos, Elementary Consultant, New Hampshire State Department of Education. This was conducted during the fall semester of 1967 and was attended by the seven teachers and others who were interested as well, since it carried college credit. From January 1968 to June 1968, teachers participated in field visits partly financed by the Center for Educational Field Studies, University of New Hampshire.

Many people were involved in the institute. Besides Mr. Economopoulos were the following:

Dr. Frank Dufay, Assistant Superintendent of Schools, Wayne, N.J.
Dr. Sideny P. Rollins, Rhode Island College, R.I.
Dr. Gilbert Berry, Principal, Maria Hastings School, Lexington, Mass.
William Perkins, Principal, Bowman School, Lexington, Mass.
Dr. Robert Anderson, Harvard University, Cambridge, Mass.
Dr. Joan Kerelejza, Coordinator of Instruction, Farmington, Conn.
Kenneth Michaels, Principal, Timberlane Regional High, Plaistow, N.H.
Wilfred Johnson, Plymouth State College, Plymouth, N.H.
Dr. John Chaltas, University of New Hampshire, Durham, N.H.
A team of nineteen teachers from Lexington, Mass.

The institute was planned cooperatively and focused upon the problems which the teachers would face in the team teaching and ungraded situtation. Teachers were asked what they felt they needed and were encouraged to propose problems. Teachers with experience in team teaching were able to answer questions about the actual problems faced by teachers.

The teachers and administrators agree that the success of the school to date is due in large measure to the preparation of the staff.

Operation

The school opened in September 1968. At the time of the team visit (March 1969) the school had a population of 328 children. The staff consisted of a principal, ten teachers, three teacher aids, and two clerks.

Except for the kindergarten, which is in a self-contained room, the instructional areas including the library area, are completely open with no partitions. The primary area is in one end of the building and the intermediate area is in the other end with the library area between.

Much time for the teachers to plan cooperatively is essential in this type of operation. A block of time on Monday afternoons is scheduled for music, art, and library work for the primary group and on Tuesday afternoons for the intermediate group. Since these activities are supervised by other than the regular staff, it results in one and one half to two hours for planning by the primary group on Mondays, and the same for the intermediate group on Tuesdays.

In addition to the above, all pupils are released on Thursday afternoons (by special permission of the State Department of Education) so that the entire staff can plan together at that time. This released time is made up by an extra one half hour in the daily program on the other four days of the week.

The teachers decide how they will group the pupils, how they will teach, how the aides and clerks will be utilized. Teachers assume more individual leadership than in a traditional situation. Rather than assuming as much leadership as formerly, the principal feels that he should encourage a climate which will allow more leadership on the part of teachers.

The open classroom lends itself to two important concepts within the framework of the organization, the mobility of children and the communication between teachers. Children may move from one group to another as they are deployed and redeployed through the various flexible levels of learning. Groups as large as seventy or as small as desirable may readily be organized for instruction.

Teachers are continually in communication with one another. This type of communication is the backbone of team teaching. The correct placement of children demands a high degree of teacher interaction.

Efforts are made to find a level where each pupil can be successful. A pupil progresses at his own rate. No pupil "fails". No pupil repeats a grade. A pupil may be "retained" in the sense that he may not progress to the next level as soon as some other pupils, but he does not repeat the same work. There is interchange between levels and to some extent between the primary and intermediate groups where pupils are at the primary level in one subject area and at an intermediate level in another. Pupils do not progress from this school to the junior high school (grade seven) until they are "ready" regardless of chronological age.

The principal indicated that disciplinary measures are administered as necessary with the objective of promoting self-discipline on the part of the pupils. Pupils are kept after school for minor infractions. Parent conferences in person or by phone are important components of the disciplinary process.

The main duties of aides have been: (1) helping the individual child in small groups with teacher-prepared lessons, (2) supervising children for bus loading, lunch period, and playground, (3) assisting in the correction of objective tests and workbooks, and (4) operating audio-visual equipment for large and small group instruction. The main duties of the clerks have been: (1) providing clerical assistance in the preparation of classroom materials, particularly tests and worksheets for pupil consumption, (2) collecting money, particularly for hot lunch and banking, (3) supervising students during lunch periods and playground activities, and (4) preparing bulletin board materials.

In addition to the regular staff, volunteer aides from among the parents are utilized. At the time of the team visit, there were about ten volunteers, many of whom worked one day per week. They help in the classroom as well as in the library area. The principal welcomes any parent who wants to come in as a volunteer. Student teachers from Plymouth State College are also involved as assignments permit.

Problems Encountered

The principal made it clear that they have problems. "I don't want you to think that we have all the answers," he said. "We have come a long way, we are nowhere near where we want to be. We spent a lot of time on the orientation of teachers, but it took some time for the students to become oriented. During the summer we brought in a few students at a time for orientation. I think they are oriented now."

The principal indicated that aides should have been trained for playground supervision and that it was a mistake to give them this responsibility without proper preparation.

Both the principal and the teachers feel that a new system of reporting to parents is needed, although the principal felt that it was better not to introduce a new method at the beginning. This need is being studied and a new system will be developed.

The school needs some additional equipment, especially such things as more individual head sets. These needs will undoubtedly be met as time goes on.

More time is needed for cooperative planning. This was emphasized by the principal and confirmed by teachers, who said that this would probably have to be done on their own time.

Teachers felt a need for a program of meeting and talking with parents and indicated a willingness to put in more hours to make such a program effective.

Factors Contributing to Success

1. The vision of Dr. Paul A. Smith, Edward Briggs, and Superintendent Herman Donegan and their concern for the individual child were important factors in the initiation of this project.

2. The visits of the board chairman, the superintendent, and the architect to some selected schools served to promote the project.

3. The concurrent planning of the building and the program permitted the architect to design the building specifically for the type of program proposed.

4. The efforts to keep the citizens and taxpayers informed were important to success in approval of the project.

5. The utilization of a volunteer staff insured interest in the project and an absence of obstructionism within the staff.

6. There is general agreement that adequate staff preparation was essential to the success of the project.

7. The ability and enthusiasm of the school principal and the mutual respect of all staff people appear to be important factors.

8. The fact that this was a tremendous team effort - administrators, board members, treachers, State Education Department, and colleges - extending over a three year period was most important.

Merits

Since the school has been in operation only about six months, it is not possible to arrive at any positive evaluation of student achievement. Observation indicates, however, that the pupils are happy and have a good attitude toward school. This is confirmed by principal and teachers.

We were told that some pupils who have had poor attendance records in the past have good attendance now. Parents have reported that pupils like school better. In fact, one mother stated that she had difficulty in keeping her child home when she was sick.

Teachers stated that despite the fact that this system requires more work and responsibility on their part, they like it because "the children are so happy and like what they are doing".

The evidence indicates that the Paul A. Smith Elementary School is an exceptionally fine example of an experimental educational project demonstrating staff vision and community support and participation. Spearheaded by a concerned, alert, and imaginative school board chairman and ably supported by the superintendent, the school staff was given high level leadership as it went about the task of developing educational approaches which might prove beneficial to the children and young people of Franklin.

While this project is still relatively new, it can be safely said that it has already demonstrated considerable usefulness in generating enthusiasm in the teaching staff, solidifying teacher morale, and setting into play the forces and dynamics which have caused a vast majority of the children to be more highly motivated and more productive in their day-to-day learning activities.

One senses that the administrative and teaching staff is still in the process of learning and exploring together the best techniques that they should utilize in this new school, but one also is very much impressed with the positive contributions already realized in the program including the merits of team teaching, systematic individual pupil learning, and the individual pupil growth towards self-confidence and self-discipline in a relaxed and flexible school environment.

This project is eminently worthwhile and it is highly recommended to educators and lay persons who are concerned about the quality of public school education and who seek new approaches which will be both stimulating and academically beneficial.

Cost Information

The new school building has a floor area of 26,600 square feet and a pupil capacity of 300 to 350. Cost of construction was $512,262 or $19.25 per square foot. This compares favorably with the cost of a traditional type school.

Staff requirements are about the same as for a traditional school of the same size.

It appears, therefore, that except for the cost of staff preparation, neither the building cost nor the operational cost should exceed that for a school with regular classrooms.

II. The Process of Change

Awareness

It has been reported that Dr. Paul A. Smith had long been concerned about the quality of education in general and with the problem of school dropouts in particular. There is little doubt that he had communicated his concerns to the Board and, of course, to the superintendent of schools. As chairman of the Board of Education, he was in position to exercise leadership to bring about change.

Interest

When the community was faced with the necessity of providing additional school facilities, an opportunity was presented for dealing in some way with some of the concerns. Dr. Smith sought information regarding methods of attacking the school dropout problem. There were three possible ways in which the needed school facilities might be provided, (1) to add to one of the existing elementary schools, (2) to build a new middle school, or (3) to build a new neighborhood school. Superintendent Donegan was committed to the neighborhood school concept and the Board was in agreement.

Dr. Smith saw an opportunity to attack the dropout problem by developing a school wherein the students would be better motivated and would not so readily lose interest in school.

Evaluation

By visiting a number of progressive and experimental schools in the East and Mid-West, Dr. Smith and Superintendent Donegan came to the conclusion that the non-graded, individualized instructional concept held the answers to some of their concerns provided such a school could be properly organized and effectively administered.

Trial

The description of this project tells the story of its trial up to this point. While there are some problems yet to be solved, and while it will require a longer period to properly evaluate, the level of success to date seems to be definitely positive and to point to a continuation.

Potential for Adoption

As indicated above, there is little doubt that the general type of non-graded, individualized instruction and team teaching program will be continued as an on-going and fully accepted kind of operation in the Paul A. Smith School.

Furthermore, Superintendent Donegan has indicated that appropriate features of this program will be introduced into the other elementary schools in Franklin as conditions will permit.

Paul A. Smith Elementary School, Franklin, New Hampshire

SECTION B.

INNOVATIVE PRACTICES IN CURRICULUM

School for Parents and Children.

Brunswick, Maine.

Closing the Generation Gap.

Project EPIC
Cranston Public Schools
Cranston, Rhode Island.

Freedom to Speak.

Project FABRIC
School Administrative District No. 33
Saint Agatha, Maine

School for Parents and Children

Brunswick, Maine

School and Community

Brunswick, Maine is located on the coast (Casco Bay) 23 miles northeast of Portland. The town is bordered by the Androscoggin River on the north, and the New Meadows River on the east. A naval air station, Bowdoin College, pulp, paper, cotton, rayon and shoe industries help make Brunswick the commercial center for the surrounding resort areas. Towns in Cumberland, Sagadahoc and Lincoln counties consider Brunswick a major shopping area. The School for Parents and Children is within half-an-hour's drive of Freeport, Bowdoinham, Topsham, Harpswell, Bath, Woolwich, Wiscasset and Damariscotta.

The School for Parents and Children is an independent non-profit organization set up along the lines of a miniature foundation. Its corporate structure resembles that of many hospitals which, although independent, provide a service to the community. Aims of the corporation include the encouragement of a continuing interest in education at all levels, and the implementation of a pilot ungraded elementary school program to demonstrate flexibility in providing for individual differences in students.

Objectives

Aspects of the program include a provision for corporate membership by parents of children in the school, teachers from neighboring community schools, and interested citizens of local and nearby towns. Parents are expected to make a contribution of effort, involvement, and responsibility not only to the School for Parents and Children, but to study problems facing education in the area, and to learn how to give more effective support to schools in their home communities. Teachers from all schools in the region are welcome at workshops, informal seminars, discussion groups, and other activities held periodically at the school. The school maintains a small professional library for reference, and has a large display of classroom materials and equipment which teachers may explore and examine. All programs of the school are dedicated to an interest in public education, and it is hoped that these activities will serve as a supplementary demonstration of current educational practices, techniques and materials desired by all schools.

The corporation maintains a model self-contained classroom in a country setting, with close proximity to Casco Bay. One large room is divided into interest centers, encouraging flexibility, pupil mobility, and increased communication. Children move from group to group and interest to interest in a physical environment designed to enhance the learning goals of the school.

Program for Children

The school curriculum is designed to provide full attention to individual learning needs and to encourage confidence, independent thinking and responsibility deemed necessary to future education and adult professional and vocational activities. The program is organized as an ungraded elementary school where children can proceed at their own rate of speed in basic subject areas, yet gain responsibility to a group through other activities. The initial program has accommodated twenty children between the ages of five and twelve. Grouping is flexible according

to the type of activities planned. The academic program emphasizes intellectual involvement rather than passive learning methods. Although the early years are concerned with acquiring basic skills, every effort is made to ensure each child's exposure to a vital and exciting attitude toward learning.

Discovery is the important approach common to all areas of study in a strong interdisciplinary curriculum which includes individualized language programs, a mathematics and social-studies continuum, integrated art, science and music. Vertical or family grouping of children rather than chronological-age grouping stimulates imaginative teaching techniques, the use of concrete and tangible objects, pupil to pupil teaching, and a break from any attempt at teaching which assumes that children learn exactly the same thing at the same time in the same way. Basic to the program is the use and awareness of all possible resources of the region. Through many field trips, use of facilities such as the Bath Y.M.C.A. for the school swimming program, apprenticing of older students as observers of various skilled persons in the area, the regular use of the public libraries of four towns, the school hopes to maintain a public spirit and to reflect the life of the various communities.

The school uses volunteer resource teachers, teachers aides, student teachers, and some student-volunteer teachers from neighboring secondary schools and colleges. The staff teacher is thus freed to do major planning and to concentrate on individual and small group instruction. The program coordinator supervises the program and provides the staff teacher with resource personnel as needed. Over one-hundred visitors have observed the classroom operation, most of them from the teaching profession.

Program for Parents

A unique aspect of the school is parent involvement. As members of the corporation, parents have an obligation to dedicated interest in and responsibility for the school. Involvement of parents is planned to help eliminate the dichotomy which too often exists between home and school. In this way, the school seeks to develop more effective ways of communicating with parents on a regular basis. The program hopes to foster a healthy partnership of learning and communication between parents, school and children. Parents are urged to read relevant materials on school programs, curriculum development, and educational philosophy and psychology, and to form discussion groups. For example, parents as a group decided how they wanted periodic reports on their children's progress handled. They voted against any written reports being sent home, and elected to arrange periodic parent-teacher conferences by request. Some parents have served as teacher-aides in the classroom, and are becoming used to the environment. Especially able parents are used as resource teachers for special projects at the request of the classroom teacher. Active participation in the day-by-day school program is difficult for parents in general, but the school is undertaking to develop more effective ways of involving parents in the educative process of their children.

Evaluation

The School for Parents and Children was launched in September, 1968. The curriculum is designed to foster individualized learning through maximum involvement of each child in tasks tailored to accommodate varying levels of intellectural development. The Committee was greatly impressed with the participation of parents through periodic workshops and in the role of teacher-aides.

The school has succeeded in stimulating the interest and involvement of educators in the surrounding area. The techniques employed in the school are still in the trial stage. Any inferences concerning the effectiveness of the methods and materials at this time would be premature.

Closing the Generation Gap

Project EPIC, Cranston, Rhode Island

(Economics and Politics In the Community)

School and Community

Cranston, Rhode Island is a residential suburban city established in 1754 and incorporated in 1910. The city is located 8 miles south of Providence, the State Capitol, and 45 miles south of Boston, Massachusetts. The population of Cranston is increasing rapidly because of residential development, convenient location, and abundance of vacant land. The educational and employment status of the adults is quite high and the per capita income is the highest in the State of Rhode Island.

The Cranston Public Schools enroll a total of 14,200 students. At present there are 21 elementary schools, two junior high schools, one senior high and a junior-senior high school. The professional staff numbers over 600, and includes full-time principals and a central administrative staff of superintendent, two assistant superintendents, and other specialists.

Cranston High School West is a junior-senior high school of approximately 2,000 students. It is a comprehensive six-year school offering a wide selection of courses at various levels to meet the needs of all students. The school was planned to be built in phases and in 1958 the first students were enrolled. Growth in school population has been rapid and in June, 1968, Cranston West graduated 235 students.

Cranston High School West, which is located on twenty-six acres of land next to picturesque Meshanticut Lake, consists of a campus made up of a four-wing classroom building: a gymnasium, an industrial arts building, an auditorium, and extensive athletic areas.

Objectives

(1) The major aim of Project EPIC (Economics and Politics In the Community) is to bring about better understanding between the younger and older generations. This objective is accomplished by having high school seniors and adults jointly investigate economic, political, and social problems in a series of summer seminars. Students and adults exchange opinions, analyze factors which divide them, and come to understand each other better.

(2) A second major objective is to motivate students to take a greater interest in local and national issues by involving them directly with the community and its adult leaders. A joint study, initiated during the summer, carries into the school year during which the same students and adults further explore the complexities of adult life in a specially designed social problems course.

Description

Project EPIC was organized by two social studies teachers at Cranston High School West, George T. O'Neil and F. John Zarlengo. It is an experimental social studies program for high school seniors, aimed at building better understanding between the younger and older generations. This goal is achieved by having both groups investigate together important local, national, and international problems utilizing the combined resources of school and community. The

program is funded by a grant of $23,000 from the United States Office of Education under Title III of the Elementary and Secondary Education Act.

Project EPIC is an enriched twelfth grade social studies program which combines the disciplines of sociology, economics, and political science to give selected students the opportunity to analyze timely world and community problems. The key to the program is the utilization of the community, its people, and its resources as a setting for combined student-adult study. Innovative teaching techniques include student-adult summer workshops, in-depth field study with the assistance of community experts, team teaching with college resource people, self-teaching by students, and the use of a variety of experimental reading materials. The program demands the fullest possible commitment from participating seniors. EPIC students develop a sophisticated factual and conceptual understanding of society as well as a sense of responsibility to the community.

The program was initiated with a summer session in which teams of students, community leaders, teachers, and parents discussed such problems as: "Are Political Parties Necessary?", "What is the Great Society?", "Urban Renewal vs Urban Betterment", "Business Ethics", "What is a Happy Family?", "Can the Negro be Free?" and "Is Religion Becoming Obsolete?". Each team, consisting of no more than five students and three adults, selected one of these topics and discussed it in a week-long seminar at the Governor Sprague Mansion in Providence, Rhode Island. Students and adults debated, argued, interviewed specialists, and planned activities designed to illuminate their topic. From their shared discussions and experiences was developed a school year program during which each student-adult team did further research in one phase of its topic. The results of the team's investigations were presented to the entire group of fifty student participants who are enrolled at Cranston High School West. The activities and field trips tested in the summer were extended to all fifty students and each team's resource persons were invited to speak to the entire class. Students gained the benefit of the intensive planning and research done by the summer teams, thereby adding a new dimension of enrichment and action learning to their social studies experiences.

The continuing dialogue between students and adults in all phases of Project EPIC provide the social studies with a new method of introducing students to the actual problems of the adult world. Because each phase of the program aims at bridging the gap between the younger and older generations, the cooperation of parents and community leaders is essential. Also, it is hoped that the cooperation among local, state, and federal levels of government encouraged by the United States Office of Education will bring about a positive and lasting impact on all phases of the public school curriculum in Cranston and the surrounding area.

Twenty-eight organizations participated directly in the adult-adolescent workshops during the summer and school year either on a full time (one week) or part time (one to three days) basis. Most full time organizations spent more time than a week as they held regular sessions with students throughout the school year.

The following served as full-time cooperating community agencies:

Cranston Junior Chamber of Commerce
Cranston High School West PTA
Rhode Island Development Council
Women's Intergroup Society
Meshanticut Garden Club
League of Women Voters of Cranston

Cranston Council of PTA's
Democratic Women of Cranston
Young Republicans of Cranston
Rotary Club of Cranston
Kiwanis Club of Cranston
Cranston Council of Churches
R.I. Conference on Intergroup Relations
Cranston Conservation Commission
Audubon Society of R.I.
Cranston Neighborhood Youth Corps
Better Business Bureau of R.I.
Consumer Protection Center of R.I.

The following served as part-time cooperating community agencies:

Temple Sinai of Cranston
South Baptist Church of Providence
Woodridge Congregational Church of Cranston
R.I. Adult Correctional Institutions' Jay Cees
St. Mark's Parish of Cranson
Republican Men's Club of Cranston
City of Warwick Planning Commission
Greater Hartford Chamber of Commerce
Cranston Executive Office

Evaluation

The greatest impact on the Cranston School Department by EPIC was making students, teachers, administrators, and school committeemen more receptive to educational change. These people have come to realize the advantages of well-organized programs and concomitant evaluation procedures in solving specific education problems.

The concern for improvement and change has caused other segments of the school leadership to act. Since EPIC was approved, the Cranston School System has appointed a full-time federal programs coordinator, and has submitted two other PACE projects - EARTH and PRIDE - for consideration. To revitalize other sections of the curriculum, Cranston High School West has launched major innovations in American History and Humanities, funded locally or through private business. All of these innovative ventures utilize community and college resources to fulfill specific educational needs and to evaluate their efforts. All contribute to establishing a flexible and changing educational environment from which young people will benefit.

The most important result is that a bridge has been built between school and community. EPIC brought about direct and meaningful participation of community leaders in the educational process. They saw the inner workings of secondary education and the need for their own involvement.

The rapport established between individual students and adults is reflected in the good will stimulated between the school and the community. Face to face discussion with enthusiastic young people has reaffirmed the confidence of many adults in the school. Candid discourse by adults

has prompted many students to overcome their apathy toward community activities. In many cases, the youths have taken the initiative in planning joint projects with adults. Many of these programs continued long after the conclusion of the summer session.

The EPIC staff was fortunate to have an evaluation by New England Association of Colleges-Secondary Schools. The Evaluation Committee consisted of professional educators from five different states who visited the school for three days. The following is an excerpt from the Committee's report on EPIC:

> "The Committee was particularly impressed with Project EPIC, a 12th grade social studies program in which the younger and older generations investigate together important community, national, and international problems...the visiting committee commends...the most interesting and hopefully very successful experimenting in Project EPIC, and the demonstrated desire of the social studies teacher to try experimentation in the social studies curriculum."

To provide an outside perspective on the progress of EPIC, Dr. Lenore De Lucia, project evaluator, invited four educators and community leaders outside the project to evaluate the program. Team members, representing a variety of professional specialities, were: Dr. Eleanor M. McMahon, Director of Laboratory Experiences at Rhode Island College; Dr. Carmela Santoro, Professor of History, Rhode Island College; Mr. Thomas Lavery, Assistant Superintendent, Warwick, Rhode Island School System; and Mr. Frank Calcagni, Director, Cranston Neighborhood Youth Corps.

Among the comments made by the team were:

1. Summer sessions were worthwhile in that students and adults accepted each other and benefited from the mutual stimulation.

2. Students showed improved ability to communicate effectively with adults and with each other, to approach current affairs critically, and to react creatively in problem solving situations.

3. Students participated in significantly more community activities than in past years.

4. An excellent by-product of the program was the good public relations established by utilizing people and agencies from outside the school.

5. The program provided an opportunity to change techniques and content of traditional social studies courses.

Among the suggestions for improvement were:

1. Students should study not only selected social problems but also the specific factors which produce strife between the generations.

2. More diversified readings should be used to guarantee coverage of the concepts and the disciplines behind current happenings.

3. The Project should be extended to lower-social-economic students and adults.

4. Written assignments should be shortened and more oral work should be stressed.

Most of these recommendations have been incorporated in future plans. However, the suggestion of extending the project to disadvantaged youths has not been acted upon because of limited funds, and because the school population of Cranston High School West includes only a small portion of these students. The original aim of the program was to work with average students rather than with the superior or the disadvantaged. The suggestion that students be exposed to lower economic-social class adults and situations is, however, an excellent one.

Other evaluations have been conducted by Dr. Robert D. Cloward of Rhode Island College.

Freedom To Speak

Project FABRIC, Saint Agatha, Maine

(Franco American Bicultural Research Innovation Center)

School and Community

This section of Maine is almost entirely inhabited by people of French-Canadian descent who are either unilingual in French (95%) or bilingual in French and English (5%). According to the 1960 United States Bureau of Census figures, 43.4% of the adults in northern Aroostook County had not completed eight years of formal schooling. The inhabitants of this area, commonly known as the St. John River Valley, have isolated themselves from the mainstream of American life in speech, customs, and behavior. This closely-knit society has remained provincial. The advent of commercial television has helped to dissolve some sectionalism. However, many French-Canadian stations are the primary source of television for families in this area.

Approximately 80% of the youngsters starting school each year are unilingual in French. Bilingual kindergartners total 60% with the remainder unilingual in English. Learning to become literate in the English language is of utmost importance to these children but before this can be achieved, they must hear and see their world in "English".

Most of the teachers are bilingual and received their education in the immediate area. The majority of the instructors are graduates of Fort Kent State College, (formerly Madawaska Training School and Fort Kent State Normal School). That institution's function, from the date of inception in 1878, was to train teachers for the Franco-American population of northern Aroostook County. The college, now a liberal arts institution, attracts students from other parts of Maine.

School Administrative District #33 (Frenchville and St. Agatha) was formed in April, 1964. The curriculum is generally traditional. Average achievement scores are 2 plus years below the national average. Intelligence verbals generally average 90-92.

Objectives

Project FABRIC was conceived and written in 1967 by a former curriculum coordinator, Patrick Babin. The project has evolved from a major period of planning to emphasis on developing a curriculum to meet the needs of bilingual children. The objectives specified for the planning phase encompass the major aspects of the project:

A. identification of the educational needs

B. search for information about exemplary educational programs in other parts of the United States

C. examination of current research relative to the curriculum

D. exploration of available resources

E. establishment of priorities to develop a curriculum to fit this particular area with its particular problems.

Procedures

A. Data acquisition

This first phase involved an attempt to discover the reasons for the extremely high percentage of underachievers in the area. Does bilingualism hamper the language development of the pupils? Are parental attitudes of significant influence?

Ninety-six per cent of the pupils are members of the Roman Catholic Church which has very strong ties with Quebec Province. Services and prayers are recited in French. What effect does this practice have on the home and school? The youngsters in the school district are situated ten miles from Edmundston, New Brunswick, Canada, a French-speaking city of approximately 20,000 inhabitants. Edmundston has an all-French radio station, CJEM. How influential is Edmunston in the lives of the inhabitants of School Administrative District #33? Two Quebec television channels, both in French, are available on Frenchville and St. Agatha television sets. The majority of the parents view these French-Canadian stations. How does this affect the homes of the region? How do the parents react to the curriculum offerings in the elementary and secondary schools? How receptive is the citizenry to the state regulation requiring that English be the language of instruction and that English be utilized by the pupils and the teachers during the school day? Do parents see a need for adult education? Does the need appear more of a necessity with the younger married set? Should incoming kindergarten children speak French exclusively? Do parents realize the importance of an English background if their children are to succeed in school?

An exhaustive survey was conducted in an attempt to find these answers. A questionnaire, directed at parents, students, and teachers, supplemented by information gathered through home visits was employed. The follow-up included gathering information concerning exemplary programs in other parts of the country where bilingualism prevails and where cultural deprivation exists. The project area was identified as:

> A situation where the populace, because of geographic location and Franco-American ties, was lacking (1) the English language which is the official language of the United States and (2) art, music, literature, and history - especially that which should be part of their French heritage.

School systems in both the United States and Canada were visited. The United States Office of Education and the Department of Education in Ottawa provided information regarding school systems with similar problems. Extensive notes, photographs, and audio-tapes were compiled.

A curriculum council was organized whose function was to coordinate and give direction to the project. Membership on this council was open to the district directors, the superintendent of schools, the curriculum coordinator, the project director, school principals, a delegation from each of the elementary and secondary PTA units, and staff members from each of the schools.

B. Use of Data

The second phase of FABRIC was the planning of a summer program at Wisdom High School, St. Agatha, Maine during May and June, 1968. Joint planning was undertaken by John Houghton, superintendent of schools, Madawaska, Maine; Martin Y. Daigle, superintendent of School Administrative District #33 appointed July 1, 1968; Donald Dugas, Ann Arbor, Michigan; Fred Stokley, Harvard University, and John K. Taylor, from the Institute of Administrative Research, Teachers College, Columbia University.

The initial sessions were devoted to a study of the original proposal for the FABRIC program along with the amendments agreed upon by the administrators of S.A.D. #33.

It was unanimously agreed that the instructional activities to be developed for the students of S.A.D. #33 would have to be prepared by the teachers of the district. It was accepted that the bicultural and bilingual situation in the school district was unique and that, although experience in bicultural programs elsewhere might be helpful, there was no single program which had been developed for the situation as existed in St. Agatha and Frenchville, Maine. It was also agreed by the staff that their main function would be to facilitate the work of the S.A.D.#33 teachers and administration by helping to provide the tools necessary to develop instructional activities which would meet the unique challenge of the students.

The first two-week period was planned to be spent in sensitivity training and the last four weeks organized for tooling up with the necessary skills and knowledge to develop the design for the instructional program in S.A.D.#33.

Agreement was reached by the staff that all policy and administrative decisions during the operation of the summer project would be decided on a majority vote basis. If an impasse developed the superintendent of schools would arbitrate. The responsibility for the daily operation of the project was assigned as follows: Fred Stokley, operational and creative processes; Donald Dugas, language development inputs; and John Taylor, administrative activities and curriculum.

Initial Plans

The summer session was organized as follows:

9:00 - 9:30 Lecture	1:30 - 2:00 Discussion
9:30 - 10:00 Discussion	2:00 - 3:00 Work Session
10:00 - 10:15 Break	3:00 - 3:15 Break
10:15 - 11:30 Work Session	3:15 - 4:00 Work Session
11:30 - 12:00 Drill	4:00 - 4:30 Drill
12:00 - 1:00 Lunch	4:30 - 5:00 Evaluation
1:00 - 1:30 Lecture	

Work sessions were devoted to developing instructional activities based on lectures and discussions. Drills were provided to improve the French and English language skills of the teachers and administrators. An attempt was made to identify drill activities which would be helpful in developing the language skills of pupils.

Community relations activities were planned during the summer program subsequent to an early meeting with the local school committee.

Staff meetings were held at the close of each day to evaluate each day's work and to plan the activities for the next day. Participants were invited to attend and to give their suggestions. This expansion in ideas promoted a stimulating work day.

The following is a list of some of bicultural needs that were identified by some participants during the last day of the two weeks of sensitivity training:

1. There is a need to learn another foreign language, especially French, because there is far more travel around the world.

2. There is a need in St. Agatha and Frenchville for more proficiency in both French and English.

3. The law that states that only English should be spoken in the schools should be repealed.

4. The children will feel no need to speak English if the teachers speak French.

5. Children should not be forced but they should on their own see the need to learn English.

6. Pupils should be made to realize that to be French and to speak French is not to be inferior.

7. When children come to school, they should have the opportunity to learn French.

8. The children at home have very little or a limited educational experience. They speak French, travel little, and have culturally limited experiences. This causes feelings of inferiority. When a child comes in from the outside and speaks proficient English, he is considered superior and more intelligent.

9. Parents feel inadequate and instill this attitude of inferiority in their children.

10. English is easier to learn than French for the children.

11. The children have difficulty in what they read because they don't know the meaning of words. They can read verbally, reproducing oral sounds. After going to school for 12 years, students are neither proficient in French nor English.

It was apparent that some form of sensitivity training would have to be provided for teachers and administrators not included in the six-week summer session if cooperative work procedures were to be effectively utilized during the ensuing year. A one-week session was arranged during the first week of school. This proved extremely valuable to the FABRIC effort.

When the summer session closed, it was agreed by the staff that it would be difficult to find a person with the understanding of the unique situation in the school district to direct FABRIC for the ensuring year. Therefore, a three member team from the staff was elected to perform the leadership function. The roles of these people were defined as they worked together and they were able to identify tasks and utilize their strengths. The co-directors were released from one-third of their regular duties to manage the Project.

The duties of the co-directors included:

1. maintaining supportive attitude of staff
2. devising method of staff contribution
3. engaging someone to develop the experimental design in introducing the major aspects of the new instructional program
4. keeping records as required by the federal, state and local governments
5. setting up procedures for financial accounting
6. publicity outside the valley and in the profession.

Areas for work in in-service training included: (1) language skills in both English and French (2) development of staff understanding of each other and self, as well as understanding of student and community; (3) establishment of a framework on which the instructional program could be built; and (4) to train teachers to help students develop a better self-image.

The leaders of FABRIC agreed to utilize the same processes for exercising leadership as were employed during the summer. These involved obtaining substantially total staff agreement on goals and procedures prior to undertaking any activity. Provisions were made for substantial periods of time to be available in which this type of process could operate. One-half day per month for the entire staff to come together and work as a group was arranged.

FABRIC has now evolved to a point where teachers are beginning to prepare instructional materials for teaching bilingual pupils. However, the project is still in the initial stages of curriculum development and inferences concerning the educational adequacy and effectiveness of specific methods for meeting the needs of the target population would be premature.

Curriculum

The Visitation Committee was greatly impressed with the positive attitudes exhibited by the staff and students toward the objectives of the project.

Evaluation

An objective evaluation of the project was not possible because it is still in the initial stage of development. Frederick J. Stokley of Harvard University was engaged to conduct personal interviews with the staff, pupils, and administrators in an attempt to ascertain the impact of the project. The following excerpts were taken from his report:

The student body felt it had a voice in what was being done in the school and that they were being listened to in both the classroom and the school. Further, they felt the degree of mutual respect between them and the teachers had risen and that there was a family spirit in the school and a sense of belonging. These sentiments were most strong in the girls. Many of the boys were rather passive and indifferent. They seem to be "enduring" school. Hence, the boys reactions to change were minimal. This latter phenomenon has, in part, a cultural explanation. It seems that the boys have certain "roles" to play not only at school but also at church and at social functions. For many boys this "cultural block" is a serious impediment to learning.

Communication channels were open between students, teachers, and the principal. Morale and enthusiasm were high. Active committee participation and time investment by the teachers was of a high degree.

There was considerable teacher autonomy and few administrative restrictions. Both teacher and pupil regard, respect, and esteem for the new principal was very high. He, in particular, the pupils felt, understood them and their needs. They felt he has been accessable, approachable and helpful.

In general, it seemed that the school climate was open, non-threatening, stimulating, and most conducive to learning.

Faculty morale and a team spirit was high. The teacher's room serves as an excellent focal point for communication and informal linkage with the administration.

Teacher and pupil relationships with the administration have improved. The former group felt that they were being listened to and that there was more understanding by both parties.

There appeared to be a comfortable blend operating between structure and freedom.

Teachers and pupils, for the most part, felt that the administration had increased in its ability to be aware of their needs.

Teachers are free to choose their own instructional materials and seem to be using "the book" less and less.

Pupils were more involved in choosing instructional materials.

Many teachers asked the question - "of what use and to what purpose are lesson plans and summaries?"

The following is a commentary on the potential for adoption:

Is it possible to transfer this approach (project) to change the urban problem or the ghetto problem with the Puerto Ricans and Blacks? The process being a blend of sensitivity training, creativity and curriculum where the cognitive input might be biculturalism but African culture mixed with American culture rather than French and English. The possibility of transference and the significance of this transference is striking. It is something that should be investigated to see if this is possible?

SECTION C.

INNOVATIVE PRACTICES IN THE USE OF TECHNOLOGY IN THE CLASSROOM

Learning Laboratory for Curriculum Innovation.

Bowman Elementary School
Lexington Public Schools
Lexington, Massachusetts

Space Science Education Center.

Middletown Public Schools
Middletown, Rhode Island

A Regional Science Center for Student Involvement.

Talcott Mountain Science Center
Avon, Connecticut

Learning Laboratory for Curriculum Innovation

Bowman Elementary School
Lexington, Massachusetts

Bowman Elementary School outwardly resembles any modern recently constructed elementary school. What distinguishes Bowman from other schools in Lexington and New England is the deliberate inclusion in its design of a large central space not committed to any specific use. Superintendent Fobert's plea to his school board in defense of this uncommitted area in original planning was the need for a laboratory in which new methods of learning might be explored by both student and staff. Results of experimentation at Bowman might then serve as a catalyst and example for curriculum improvement in each of the other ten elementary schools in Lexington.

Dr. Fobert's concern in proposing the laboratory, as expressed to the Technology Committee, was that the school should not adhere to a highly structured, rigid schedule. There should be the freedom to work at something one likes to do, something which may "turn one on", or to go back to something which has not been done well, and do it more effectively.

By placing the laboratory space in the central core of the physical plant, all teachers have been given access to it. The visitor to Bowman will discover the laboratory shares the center of the school with the library and administrative offices. Individual classrooms lie on the periphery of a large corridor surrounding the laboratory and library. The provision of space for a laboratory, however, does not in itself encourage innovation. The administrative pattern of the school must have enough unstructured time to permit and encourage teachers to try different approaches to learning. At Bowman there are eight teacher aides who relieve teachers from clerical and other time consuming non-teaching tasks. All aides are paid by the school system. This represents a cost of $23,000 a year at Bowman.

Perhaps more important is the need to create a climate in which teachers are not apprehensive about trying out their own ideas. The Lexington School Board demonstrated unusual perceptiveness in the choice of William Perkins for the principalship of their new school. Throughout several hours of tape recorded interviews with the school staff, members of the Technology Committee found a consistent pattern of comments expressed again and again, that he is the kind of a man who helps you to evaluate yourself. He makes himself available to you, giving needed help, or listening to any suggestions you care to make.

A team organization replaced the line and staff structure so typical of many schools. Under this arrangement all learning activities are the responsibilities of teams of several teachers each. Each team appoints a leader who serves for a limited period of time. In commenting upon this structure, Perkins noted that the teams make the schedule, not the administration. The moment the latter happens, then something someone else has in mind, or some cooperative agreement is blocked. What has developed is not three teams, or six teams, but one big team, which can function as a lot of small units which may exist today, and not exist tomorrow.

The teams decided priority should be given to geometry, number concepts, and the communication processes involved with various kinds of contemporary media. They agreed that children should assume as much responsibility as possible in planning and evaluating their own progress with respect to these activities.

After agreeing on what should be done with the lab, teachers faced the technical problems of obtaining machinery, making devices for learning, and of organizing the unstructured space of the core facility into their learning laboratory. Today the visitor will find not only learning devices such as pattern blocks, multicolored two-dimensional planes and three-dimensional solid models for illustrating mathematical properties of spatial structure, but also the power drills, grinders, saws and other equipment with which they were made. In the media communication area he will find a fully equipped photographic dark room. The unusual fact about all this equipment is that it was procured by teachers. Further, all the learning devices within the laboratory were made by either teachers or students. During the site visits by the Technology Committee, many students were observed making models and devices for other students to work with. The purpose of making learning devices is really two-fold; besides demonstrating basic concepts of science and mathematics, an opportunity is created for children to work purposefully with their hands.

Conspicusouly absent from the laboratory were television, tape recorders, tachistoscopes, and other expensive electronic gadgetry. This does not mean Bowman is without such equipment, but it does mean that laboratory emphasis is upon simple devices which children can handle on their own. In its present form the laboratory primarily emphasizes mathematical concepts. The technology employed is rudimentary by industry standards. The workmanship represented in the learning devices often shows effect of young hands using unfamiliar tools. The learning results, however, are amazing. This is because Bowman is a children's school. The children feel it is their school. They regard the things they work with in the lab with proprietary, respect and concern. Most central to the learning observed by the Committee is the complete and effective involvement of each child in purposeful activities.

The laboratory itself is 2,232 square feet in area and represents an additional expense over and above the basic cost of the school. The number of students which it serves varies with the day-to-day program of the school. Generally, from 90 to 200 children can expect to spend at least one hour a week in the laboratory. The administration of the school lab program, however, lies with the several teams of teachers who together plan the activities for their children. Thus, the actual amount of time given in the lab will depend on the plans of these teams.

In concluding their observations and interviews at Lexington, the Technology Committee felt the space and equipment of the laboratory were far less important than the quality of the staff and of the school administration which accounts for its existence. If any factor is key to the innovation at Lexington, it is the leadership of the administrators who have encouraged this sort of thing to happen by their support of promising and different educational practices.

Bowman School, Lexington, Massachusetts

Space Science Education Center

Middletown Public Schools
Middletown, Rhode Island

The Space Science Education Center at Middletown, Rhode Island consists of a planetarium facility located adjacent to the new elementary school. Central to this facility is a Spitz astronomy projector obtained through a grant from Title III ESEA. The projector itself is housed under a 30-foot dome erected by the Middletown School Board using local school funds. The planetarium facility may be used by any elementary or secondary school teacher on Acquidneck Island, where Middletown is located, and could involve as many as 20,000 students in the island's schools.

The idea for the Middletown planetarium originated with the Superintendent of Schools, Joseph Gaudet. The exciting possibilities contained in his proposal were the cooperative use of the planetarium by all six school districts on the island, as well as use for adult education and by the local Navy War College facility and local industries. This was the basis of the proposal upon which federal funds were granted to Middletown. In submitting its application for Title III moneys, endorsements were secured from all of the local public school systems, its private schools, the Navy facility at Newport, and the leading local industries. The project proposal was approved in February, 1968, for $100,000 in federal funds. Substantial local funding support was provided by the Middletown School Board, which allocated $77,000 for the construction of the planetarium building and the dome. In addition, some $6,000 were provided from NDEA funds for accessory and peripheral equipment and materials. As part of the plan to provide services to children from other school districts, and to adult and industry users, the planetarium building is located as a self-contained facility adjacent to, but separate from the new Middle School in Middletown. A separate parking lot is available for school buses. Entrance to the planetarium is provided separately from the main school building to eliminate any possible disturbance to classes in session.

In addition to providing for the purchase of the planetarium projector, federal funds have enabled classroom teachers from Middletown and the six cooperating school districts to participate in a specialized space science in-service training program at nearby Brown University. This instructional program consisted of a series of twenty-four, two-hour workshop session in which teachers were provided with the opportunity to trace the course of stars and planets in the heavens through the use of an astronomy projector. The planetarium was used to represent the sky as it was in the year 2000 B.C., or as it will appear in 4000 A.D. Through such use of the Middletown facility, it is planned to use it as an instructional tool to teach students the rudiments of star plotting, space mechanics, and space navigation.

But unlike the usual classroom teaching aid, the intricate system of lights, lenses, gears, and controls of the planetarium projector represent some of the most sophisticated technology available from industry today. The projector is essentially a teacher demonstration tool which does not encourage "hands-on" learning activities which involve students directly.

After having the operation of the planetarium demonstrated by its chief operator, the Middletown science coordinator, the Committee interviewed the superintendent, principal, and two Middletown elementary teachers who had been through the in-service training program at Brown University. Although the equipment had been operational for five months, there had been no organized use of the planetarium by students. No staff, it was explained, were available to operate it. At the time of the Committee site visitation, only three teachers in the school system had acquired the training and experience necessary to operate the equipment. This situation represented a source of concern for each of the teachers that were interviewed, as well as for the administration.

Other factors appeared to have delayed the plan to make effective use of this unique teaching and learning facility. School time was not available to enable the teaching staff to learn how to use the planetarium and relate it to the school's instructional program. Also, the in-service training provided for the teachers took place away from the school and its atmosphere. In looking back on this training, teachers commented that the program was geared more to an individual who had an extensive background in space science rather than the average classroom teacher. Only a limited amount of practical experience was given in the actual operation of the planetarium equipment. In addition, the level of mathematics used in the in-service training was beyond the easy comprehension of the majority of the teachers attending the sessions.

These problems of Middletown in making effective use of its new planetarium facility are shared by many other school systems who purchase equipment or instructional aids without first undertaking an extensive investigation with the teaching staff of the relationship of the curriculum to the use of the new devices.

Technology for learning cannot be regarded apart from the curriculum or the teacher. Technology, whether in the form of teaching devices or as media for communication, such as the overhead projector, can only serve as an extension of the teacher's own intellect and personality. It is the teacher who must see the relevance of technology, and apply it to the learning process. If the teacher doesn't understand it, or is uncomfortable with it, the risk capital ventured as an investment in equipment will be wasted. As the Committee prepared to leave the Middletown planetarium facility and Space Science Education Center, Superintendent Gaudet said that a major problem confronting him was whether or not he could interest some of his staff to come and "take the plunge". Generally, the teachers were awed by the machine (planetarium) -- they really didn't know it yet.

The potential for an exciting space science program for school children in Middletown and on Aquidneck Island has been made possible by the establishment of this new planetarium facility. The initial excitement is subsiding and will no doubt be replaced with a careful evaluation by administrative staff and teachers of how a planetarium can be staffed, organized, and related to the on-going curriculum of the schools. Very likely the daily class schedules, as well as the curriculum, will have to be adjusted to some extent to provide for most effective use of the planetarium facility.

The nearby Naval establishment and local aerospace industries are most enthusiastic supporters of the project. In addition, a real potential now exists for an extensive adult education program in space science. Administrators at the Naval War College in Newport have expressed a desire to incorporate use of the facility into their advanced training program. Additional uses promise to develop as the existence of the planetarium and its instructional program become more widely known.

The increasing use of the facility underscores the need for an extensive committment by the Middletown School Department to training and providing competent staff to supervise and conduct the program. The science coordinator, Mr. Krupowitz, and the staff audio-visual director had received extensive training in the operation of the equipment. However, previous work committments prevented them from devoting the time required to develop a program for use of the planetarium facilities. It is obvious that equipment as complex and new to education as a planetarium, however, requires the full-time services of a highly trained teacher-director and supporting staff. Such skilled people are not generally available to the schools. Superintendent Gaudet asserted repeatedly that this is a critical need which is not adequately recognized by teacher training institutions. The Technology Committee feels that the next step in Middletown will be to provide the necessary technical and supporting staff for the planetarium facility. The Committee also feels it necessary to create an administrative climate in which teachers may evolve their own uses for the planetarium related directly to their own instructional programs.

Following the original official site visitation in February, a number of changes were made to the Middletown program. A special follow-up visit was made in June, when the following important changes were observed. First, the Middletown's science coordinator had been freed from his responsibility to become a full-time planetarium coordinator, with secretarial assistance. Acting in this role, he had organized a regional coordinating committee representing the six school systems on Aquidneck Island. This committee was meeting on the day of the follow-up visit to develop applications for the planetarium to existing science programs, and to make final recommendations for a twenty-day summer in-service training workshop.

With the assistance of an additional Title III ESEA Grant of $50,000, a new in-service training program is being organized. Unlike the previous program, the new one will take place in Middletown and will involve five major resource persons from several area colleges. These staff members will represent not only the formal disciplines of astronomy, but also the University of Rhode Island School of Education staff, familiar with the teaching of science courses. In addition, the planetarium vendor has agreed to provide a consultant who is an expert in planetarium lesson planning.

The freeing of the science coordinator for work with the planetarium has made it possible to begin involving Middletown students in the utilization of the Science Center. All students at the new Middle School have now visited the facility once. This means that over 1200 6th, 7th, and 8th grade students have now been through the planetarium.

In addition, two 9th grade Space Science classes and the 12th grade Physics class have made eight visits each in a lesson sequence involving the planetarium. Interviews with students yielded the following major conclusion:

> Students who had been exposed to the planetarium lesson sequence all felt it helped them visualize and appreciate the relative motion, position, and distance between celestial bodies in a way not possible with textbooks and other aids.

> In addition, comments of students lead the observer to the conclusion that these students have experienced a heightened interest in Space Science as a result of their experiences. No data were available to indicate relationships between these differences in student attitudes and their achievements in the knowledge of science.

In conclusion it appears that many of the originally assessed problems in the application of the Space Science Center to the Middletown curriculum have been, or are being, overcome by developments subsequent to the original site visit. It seems reasonable to assume that heightened student interest and appreciation of space science will eventually be exhibited in greater science knowledge. The development of a more relevant in-service training program for teachers and science coordinators in other island school systems will, no doubt, result in many innovative applications for other school systems.

A Regional Science Center for Student Involvement

Talcott Mountain Science Center
Avon, Connecticut

The Science Center at Talcott Mountain began with a tentative offer of an obsolete Nike missile site by the General Services Administration to Dr. Frank Driscoll, Superintendent of Schools in Avon, Connecticut. His response was that he didn't know what he would do with it, but he wanted it.

Getting it proved to be more difficult than finding uses for it. Dr. Driscoll recalled for the Committee one meeting at which thirteen lawyers representing almost as many government agencies were required for negotiations. He took the proposal to his staff and asked them what they could do with it. The result was an idea for regional cooperation among his school districts which surround the mountain. Today these nine school districts account for 50,000 children. Last year over 37,000 of them visited the Talcott Mountain Science Center as a part of its day program. More than one fourth of these children then enrolled in voluntary night programs at the Mountain.

After obtaining the land from the Division of Surplus Property Utilization, Department of Health, Education, and Welfare, the Avon School District submitted a Title III proposal for federal funds to construct a mountain top science center, including a weather facility, astronomical observatories, radio electronics, and geology laboratory. In addition they do comparative ecology of mountain and valley. In February, 1967, $50,000 was made available to permit the construction of site facilities. The first year of operation $32,000 was obtained for the purchase of telescopes, spectrograph, coelostat, a satellite weather station, and other scientific equipment. Through the enterprising efforts of Director Donald LaSalle and his staff, local industry contributed nearly as much. These contributions ranged from telescopes, to loan of a full sized computer which is to be subsequently connected to remote terminals in participating schools.

Facilities at the site consist of two classroom buildings equipped with laboratories, an observatory, a radio telescope, and a large sundial-observation platform. The area occupied by the site consists of 6.2 acres of land. Although the Avon school districts receive and disburse funds for the Science Center, the operation and management lies in the hands of its director, Donald LaSalle. At the time of the Committee's visit, there were eight full-time staff members employed by the Center. Each staff member was carefully selected and represents a particular specialty. About half of the staff are a product of educational institutions. Director LaSalle's intent was to obtain experienced and practicing scientists to staff the Center. In this way the Center could uniquely augment both the equipment and skills of its member school districts.

The Committee spent two days visiting the site interviewing students and staff, then parents and teachers who accompanied students to the Center. The Committee filled its site visits with interviews of superintendents, principals, and teachers in three of the nine member districts. Several factors stood out in each of the interviews. First, as an innovative agency, TMSC does not impose change on its client school systems. This is a deliberate part of the philosophy of the Center and its director, who stated that anything that one does at school has to be woven into their total effort. Otherwise things are taught in isolation, and when one leaves nothing further happens.

Mr. LaSalle explained that his staff members are told when they go to a school to stop and say "hello" to the principal, and to tell him that for the time they are there they are on his staff and they are there to do what he wants them to do.

The effectiveness of this attitude and approach was demonstrated again and again in words similar to those of a local teacher whom we interviewed. He said that once he stopped thinking about the science center as the mecca on top of the hill, and became aware of who the people were and what they were able to do for him, he was able to go there and get whatever help he needed.

We asked each one of the TMSC staff how they operated in relation to the teachers in the local client systems. The typical procedure was for the teacher to get in touch with TMSC through the local science coordinator, or in some similar fashion. The teacher usually asks what they have that may help her out. TMSC then develops something in the way of materials, lesson units, or equipment loans, TMSC takes them to her school and works directly with her class doing as much with the students as possible.

Although expressed in different terms by others of the TMSC staff, the central fact remained that each member saw himself involved in a helping relationship, as a collaborator with the teacher, facing the challenge of a difficult learning problem for children.

Mr. LaSalle, TMSC director, expressed his philosophy of learning at the center as the "hands on approach". The goal is to get children to use scientific equipment with their own hands in order to learn the scientific process. His feeling is that too large an amount of teaching is done in a vacuum. "It is more important that youngsters learn the investigative process and its related techniques, rather than just the results."

For these reasons there are no conventional science demonstrations or lectures at Talcott Mountain. Each child works individually with a telescope, each child plots planetary movement, and each child learns how to use the computer to make his own calculations. Mr. LaSalle stated that TMSC worked with the individual child for the application of true knowledge. The next step is a synthesis where the student takes a whole set of ideas and evolves new understandings for himself.

Perhaps this is why so many reappear at the voluntary evening programs. Each activity at TMSC has a reason behind it. Each staff member has a working philosophy behind his learning activities.

The Science Center is not a substitute for local schools. What it does is to supplement existing school curriculum offerings with the opportunity for actual laboratory work utilizing real laboratory instruments. It provides an inventory of equipment and skills too costly or too infrequently used to be justified as a part of the local school system. By grouping their resources in a regional center, local districts have enriched their programs and offered a new dimension to the science curriculum for their students.

A principal we visited apologized because he had no objective evaluation data, no indication of how many more science "facts" his children had learned. But he went on to explain this wasn't the purpose for taking his students up there. They went there to receive motivation, to bring them out of the regular school situation for a little while, to do something a little different in working with real scientific equipment and trained scientists.

Beyond this role the Center serves as a catalyst and an agency for presenting new practices within client schools through in-service training and consulting help to local teachers. Teachers are encouraged to use a TMSC staff member as a consultant to help them assess their need for new science skills. When a plan has been worked out the Center provides a teacher training workshop bringing in as many specialists from nearby universities as are needed. Teachers learn of new techniques, practice them at the Center and then go back to their classrooms to teach their students. Only when teachers have the opportunity to try and perfect new practices in a supportive environment does change really take place, Director LaSalle explained. After having gained proficiency in a new role within a protected environment, she then feels ready to exemplify it before other local teachers and students in the back-home situation.

At Talcott the teacher is regarded as the key to influencing the quality of the learning process. The equipment available serves as a tool to extend the range of perception of the teacher and her pupils. The readiness and understanding of how to use technology precedes its acquisition and application.

COMMITTEE CONCLUSIONS

In summing up its five hundred pages of recorded interviews and nearly as many photographs for documentation, the Technology Committee arrived at the conclusion that:

> The application of technology accelerates the learning process, but only when teachers understand it and regard it as an extension of their own intellect in directing the learning process. Teachers can be most effectively led to change when involved directly in the process of planning for change.

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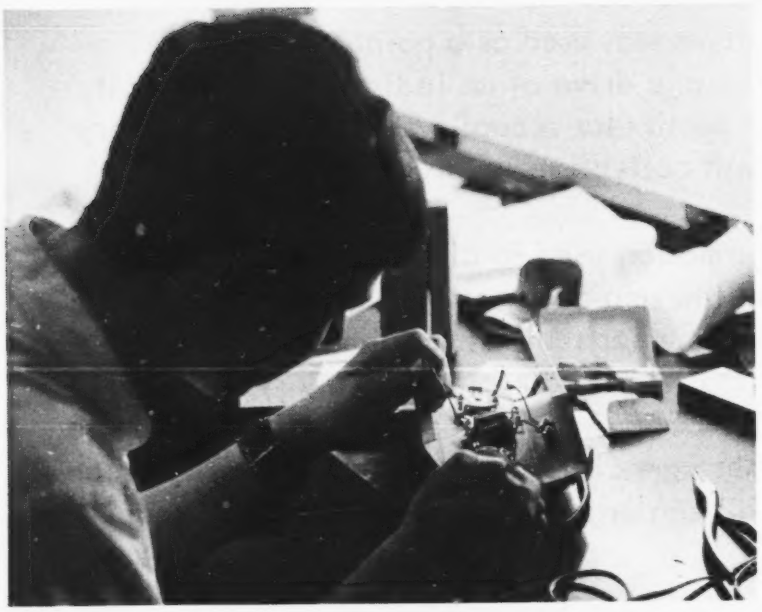

Talcott Mountain Science Center, Avon, Connecticut

CHAPTER III

Synthesis

As stated previously, information about the projects was derived from interviews with administrators, teachers, project directors, pupils, and selected parents. In addition, comments from members of the community not directly associated with the projects were solicited. The data from the site visitations were consolidated and analyzed in relation to the stages of the innovative programs observed by the Committees.

The data were broken down into five stages of project development: awareness, interest, evaluation, trial, and adoption.[1] The awareness referred to the initial perception of the problem and possible alternatives for resolution. The interest stage involved purposive exploration of potential solutions. The evaluation included a review of the feasibility of the strategies before the project was undertaken with the target population. The trial or pilot study was followed by an assessment of the potential for adoption.

The synthesis was generated from general trends or patterns observed in some of the projects by the visitation teams. Obviously the observations cited by the visitation teams do not apply to all the projects. The reader is reminded that the generalizability of the report is limited; however, the synthesis may suggest fruitful avenues for future exploration regarding the conception and implementation of innovative practices.

The Committees attempted to determine the path of educational innovation in each of the areas visited. Leadership for setting in motion the circumstances that created an awareness of the problem and the subsequent development of alternatives was used as a point of departure. Each new program was usually the result of the initiative and drive of an individual or, at most, a few persons to change pedagogical practices within a particular school system. In only a very few instances were classroom strategies generated through collective involvement of the staff.

Innovators were quizzed about the sources of information used in clarifying their problems and in generating solutions. The Committees discovered that most innovators were generally aware of "lighthouse" projects currently underway relating to their particular situation; however, the staff was not as well informed. The initial data gathering stage did not reveal any systematic inquiry or search by innovators. Information relating to the project was usually derived from site visitations and incidental contact with educators in other agencies. State departments of education were not generally consulted until the projects had been organized and instructional sequences proposed.

Available evidence suggests that major restructuring of school programs is usually initiated and implemented by administrators. The Committees attempted to verify this observation in their field inquiries. Interviews with the project directors suggested that teachers, with administrative approval, can modify practices that are within their immediate control such as classroom methods, relocation of curriculum content, and the addition of new courses. However, major modifications in the school program necessitated administrative support and intervention from the beginning. In no instance was the absence of administrative backing noted.

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[1] Carlson and Kiernan, Op. Cit.

The Committees were interested in the involvement of teachers and other staff members in clarifying and refining the problem during the initial stages of project development. Interviews revealed that most teachers had little influence on the development of strategies aimed at achieving the goals as they were enumerated by the innovator in the proposal. The involvement of teachers seemed to occur more in the advanced stages of project development.

The project staff was almost always selected from within the school system. They usually had been associated with the project director and had little experience in the new area of activity. No special qualifications, other than those required for all system teachers, were established for the project staff. The only exception to this observation was the employment of persons with special training or skills to operate apparatus. In-service activities for the staff were usually instituted by project directors. The content of these sessions was planned by the project director and tended to focus on immediate technical needs to get the project underway.

Teachers working directly with the innovative practices were questioned concerning their assessment of the adequacy of the innovative activities. A high degree of congruence between the classroom activities selected by the innovators and the philosophy of the staff was observed. The Committees noted that although most teachers were not directly involved in the initial planning and selection of the project goals, there was no observable evidence of dissatisfaction with the conduct of the innovation.

The Committees attempted to determine what incentives were provided to attract and retain project staff. Discussions with participants revealed that recognition and approval from outside the project provided strong inducement for sustaining innovative activities.

Project directors sought to communicate periodically with the staff and community. A deliberate, continuous effort was made to advise the local press of events relating to project activities. Administrators were the recipients of favorable publicity. The support of the news media helped to generate and sustain enthusiasm for the project in the community.

The Committees attempted to ascertain the impact of the innovation on parents and boards of education. Selected persons outside the projects were asked if new programs resulted in more positive attitudes toward the school. Generally, parents did not know enough about the innovative strategies to oppose the project. The interviews seemed to indicate that the active support of the parents was not necessary for new programs to occur. However, boards of education were better informed and they actively supported the projects.

The Committees attempted to identify possible sources of resistance to innovative programs. Generally, teacher opposition did not materially alter the effectiveness of overall operation of new programs. Resistance was often a consequence of a lack of information concerning the intent and involvement of staff. A continuous flow of information about the program seemed to reduce resistance. Staff relationships were strengthened in schools where constant reassurance and support were furnished by the innovators.

The Committees inquired about the effectiveness of the new programs. Project directors and administrators were anxious for the Committees to discuss the impact of the innovation with the pupils. The new programs were generally well received by the students. Considerable emphasis was placed by project directors and teachers on student enthusiasm as a criterion for instructional success.

The Committees noted that training in group processes resulted in more positive attitudes toward the innovation. What is commonly referred to as sensitivity training or T-groups, tended to establish an atmosphere in which the staff evaluated non-defensively information about their personal performance. Group process sessions also served to reduce role conflict and create a greater acceptance of the innovation.

The selection of target populations was made on the basis of the objectives specified in the proposal. The innovative practices were usually devised and implemented in the same manner. The innovative activities were generally considered by the staff and community as legitimate functions of the school. However, in some instances, issues were raised that may have lacked general community acceptance. For example, alternatives proposed to pupils in some instances were controversial and were not presented in an objective, inquiring context.

Most of the innovators were able to define their general goals clearly, however, classroom strategies had not evolved to a point where objective evaluation would have been possible. Particularly during the initial stages of development, the translation of project goals into activities that could be readily adopted by teachers sometimes presented a problem.

The Committees observed that the innovators had attracted widespread attention. Educators from nearby school districts made frequent visitations to the project schools. However, the adoption of promising practices could meet with some difficulty because of insufficient written records of the strategies currently being employed.

Several of the projects visited by the Committees were funded with Title III (ESEA) funds. When asked about the potential for continuation after the expiration of the Title III grant, most project directors indicated that adoption of the program with local school funds would be difficult or improbable. In these situations, there seemed little evidence of planning for sustaining the innovation when outside support terminated. The commitment to the innovation was often limited to the duration of the funding period.

A climate of freedom to modify and alter strategies in view of shifting needs and circumstances existed in the schools visited. Teachers were encouraged to suggest new techniques and to discard practices when they proved ineffective. There was no evidence to suggest that administrators or project directors attempted to impose classroom activities.

Perhaps the most significant consequence of the innovative programs was the positive attitudes of the staff. The Committees noted the presence of the "Hawthorne Effect" in all the innovative schools. This may be attributed to the attention, encouragement, and recognition given to the project staff.

RECOMMENDATIONS

Schools

1. Many of the new programs visited were in initial stages and had not evolved to a point where an objective evaluation would have been desirable or possible. The Committees noted, however, that the innovative schools tended to place heavy reliance upon favorable student attitudes as a criterion for success. When the innovative projects progress to a stage where objective assessment is possible, other measures should be employed to determine the adequacy of the projects.

2. Generally, teachers were not involved in innovative programs until they had been fully developed and were ready for a trial. The Committees suggest that potential innovators make a greater effort to solicit and involve staff during the awareness and development stages of new programs. The collective generation of potential solutions and classroom activities could significantly reduce many of the problems noted during the implementation stage.

3. A successful trial is contingent upon the provision of long range in-service programs that furnish the engineering skills necessary to translate project objectives into appropriate classroom strategies. The importance of planned and continuous guidance for the staff, particularly in the initial stages of the innovation, cannot be overemphasized.

4. Innovation unquestionably flourishes in an environment that provides opportunities for the staff to interact frequently and to experiment with new concepts. An absolute requisite for promoting significant educational change is active and continuous administrative support and encouragement.

5. In projects requiring major alterations in the organizational pattern of the school, the staff must acquire many competences simultaneously and within a relatively short period of time. The Committees suggest that implementation of innovation practices could be greatly facilitated if the initial strategies were divided into smaller tasks and introduced gradually. An evolving implementation plan would also assure effective staff involvement and a proper balance in the use of school resources.

6. The Committees were concerned that most schools expressed some reservation concerning the continuance of projects once Title III (ESEA) funding terminated. Plans should be formulated to allow for a gradual adoption of proven innovation strategies as a part of the basic structure of the school program. A major consideration for assessing the feasibility for initiating and approving new programs should be a reasonable probability that the project can be carried on with local resources.

RECOMMENDATIONS

State Departments of Education

1. The approval of innovative projects should be contingent upon a realistic chance of continuation of the activities upon the termination of outside funding. Innovators should be guided in the development of definite long-range plans for integrating project activities so that proven strategies can be absorbed into the basic educational structure and funded with local resources.

2. State consultants should assume a major role in helping potential innovators during the awareness and conceptualization phases. Data and experience relating to similar problems can greatly aid in assessing local needs and devising specifically tailored activities. State departments of education should actively promote the availability of this service.

3. State departments of education should encourage innovation by providing encouragement to local school districts that are contemplating, or are in the process of executing, new practices. The Department can function as a supporting agency, providing a "Good Housekeeping seal of approval" to schools that have undertaken promising educational programs.

4. State departments of education should become effective clearing houses for information relating to new educational programs. Local school districts should be advised of library materials available in each state office from the Educational Research Information Center (ERIC). In addition, state departments of education can serve as regional depositories for materials relating to innovative programs developed within the states.

5. State departments of education should be instrumental in linking innovators together in order to facilitate sharing of ideas and problems that are of mutual concern. State agencies can greatly increase the probability of adoption of promising educational practices by assuming a linkage function. Regularly scheduled regional meetings would be of substantial value in achieving this goal.